

MEMORANDUM
Water Pollution Control Commission
P. O. Box 879
OLYMPIA, WASHINGTON
98501

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WA-23-1090

TO: Nelson Graham

DATE: November 14, 1969

FROM: Ron Lee

SUBJECT: Gheer Creek Survey

The analytical results obtained from water samples collected above and below the septic tank discharges in the vicinity of Gheer Creek indicate the presence of relatively high nutrient levels, especially nitrogen compounds (Tables 1 and 2). However, the significant feature is that there is no apparent increase in nutrient concentration as the stream flows by a land area receiving septic tank drainage. In fact, the concentration of nutrients upstream were found to be higher than those downstream from the septic tanks. The settling out of nutrients in Carlisle Lake and in numerous beaver impoundments along the stream located above and below the septic tank areas would explain this reduction in nutrient concentration.

Total coliform counts taken from Gheer Creek ranged from 6 (per 100 ml sample) at the upstream station to 140 at the outlet of Carlisle Lake to 24 at the downstream station. A count of 120,000 was obtained from a standing water sample collected in the septic tank drain field.

The COD and 5-day BOD values at the upstream station were 48 ppm and 7.5 ppm, respectively, and 40 ppm and 1.5 ppm, respectively, at the downstream station.

RAL:lm

Attachment

Table 1. Nitrogen and phosphorous nutrient data for filtered water samples collected in Gheer Creek, Onalaska, Washington. All units are expressed in $\mu\text{g}/\text{l}$ (1 ppm = 1000 $\mu\text{g}/\text{l}$).

Station	Nitrate NO_3 as N	Nitrate NO_2 as N	Ortho- PO_4 as P	Total PO_4 as P	Urea as N
Highway bridge 1 mile upstream	480	18	150	224	370
Carlisle Lake outlet	120	6	54	84	0
Downstream bridge	80	7	25	86	0

Table 2. Nitrogen and phosphorous nutrient data for unfiltered water samples collected in Gheer Creek. All units are expressed in $\mu\text{g}/\text{l}$.

Station	Ammonia NH_3 as N	Organic Kjeldahl Nitrogen as N	Ortho PO_4 as P	Total PO_4 as P
Highway bridge 1 mile upstream	1000	1209	183	266
Carlisle Lake outlet	0	800	70	144
Downstream bridge	0	560	40	90

Chem files

STATE OF WASHINGTON
 WATER POLLUTION CONTROL COMMISSION
 ANALYTICAL REPORT SHEET

To: RONALD LEE

The following are the analytical results from survey conducted at:

GHER CREEK, ONALASKA WASH

LAB. NO.	STATION NO.	FILTERED NITRATE-N NO ₃ AS N	FILTERED NITRATE-N NO ₂ -N	FILTERED ORTHO-PO ₄ PO ₄ AS P	FILTERED TOTAL-PO ₄ PO ₄ AS P	FILTERED UREA-N CO(NH ₂) ₂ AS N	UNFILTERED ORTHO-PO ₄ PO ₄ AS P	UNFILTERED TOTAL-PO ₄ PO ₄ AS P
		µg/l N/l	µg/l N/l	µg/l P/l	µg/l P/l	µg/l N/l	µg/l P/l	µg/l P/l
674491	AT HIGHWAY BRIDGE 1 mile upstream	480.0	18.0	150.0	224.0	370.0	183.0	266.0
694492	DOWNSTREAM BRIDGE	80.0	7.0	25.0	86.0	0.00	40.0	90.0
694493	POND OUTLET	120.0	6.0	54.0	84.0	0.00	70.0	144.0
CONTINUATION:								
					LAB. NO.	COLIFORM		STA.
		UNFILTERED	UNFILTERED	COD	694487	6		# 1
		AMMONIA-N NH ₃ AS N	ORGANIC KJELDAHL N AS N	P.P.M	694488	120,000		# 2
		µg/l N	µg/l N		694489	140		# 3
694491	AT HIGHWAY BRIDGE 1 mile upstream	1,000	1,209		694490	24		# 4
694492	DOWNSTREAM	0.00	560.0					
694493	POND OUTLET	0.00	800.0					
		COD	BOD 5-DAY					
		P.P.M	P.P.M					
694494	Pond	48	7.5					
694495	Pond	40	1.5					

Notes: ALL UNITS EXPRESSED IN µg/l ; EXCEPT FOR COD, BOD & COLIFORM
 1 PPM = 1000 µg/l

Date 10/31/69

by Ronald Provost
 Supervising Chemist

Ratio of N to P

$$\frac{N}{P} = \frac{\text{FILTERED} + \text{UNFILTERED } N}{\text{TOTAL } P \text{ UNFILTERED}}$$

694491 $\frac{N}{P} = 11.6$ AT HIGHWAY BRIDGE
1 MILE UPSTREAM

694492 $\frac{N}{P} = 7.2$ AT DOWNSTREAM BRIDGE

694493 $\frac{N}{P} = 6.4$ POND CUTLEI